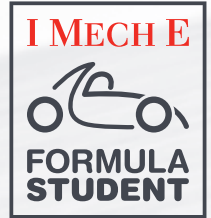


## FORMULA STUDENT

Institution of Mechanical Engineers



# Congratulations to the University of Kaiserslautern

FOR PARTICIPATING IN FORMULA STUDENT 2008

First  
time  
at FS UK

Kaiserslautern Racing Team is a first year competitor in the Formula Student competition. In order to provide a solid foundation for future designs, performance objectives were defined for the vehicle and its subsystems by analysing state-of-the-art technology in professional motor sports and concepts pursued by other student racing teams.

A CFRP monocoque was selected as the chassis in order to have more latitude in terms of ergonomics and integration of functions. The rear space frame was designed around a 3D scan of the selected engine. Taking the CAD human model into consideration, optimisation of both the engine's position and the human model was performed in respect to the car's centre of gravity.

The air intake system is based on a full variable air intake length and the use of light weight materials. A CFD optimised laval nozzle also was included to counteract the air restrictor. A dry sump lubrication system was integrated because of its ability to prevent oil-starvation at high g loads. In combination with a new constructed exhaust manifold the engine height and the centre of gravity was reduced.

An electrical water pump was installed to ensure sufficient engine cooling. For fast shifting a pneumatic cylinder was installed on the gearshift shaft. To save time the fuel injection is differred to allow shifting without de-clutch.



**Length/width/height/wheelbase**  
2843mm/1412mm/1120mm/1700mm

**Track (front/rear)**  
1262mm/1170mm

**Weight including 68kg driver (front/rear)**  
128kg/192kg

**Suspension (front/rear)**  
Double unequal length A-Arm. Pull-rod actuated/push rod actuated horizontally oriented spring and damper

**Tyres (front/rear)**  
160/550/180/550R 13/  
Hankook Ventus 200 soft

**Wheels (front/rear)**  
6x13, 15,3mm offset, 3 pc Al Rim/  
8x13, 47mm offset, 3 pc Al Rim

**Brakes (front/rear)**  
Floating, Cast Iron, hub mounted, 220mm outer diam., 172mm inner diam./Non Floating, Cast Iron, hub mounted, 210mm outer diam., 162mm inner diam.

**Frame type**  
Rear Tubular space frame/Monocoque mid and front section, 25 CrMo4 alloy steel tubing, 25x2,5mm and 20x1mm tubing/CRFP with foam core

**Engine**  
Suzuki GSX-R 600 K4 2004

**Bore/stroke/cylinders/cc**  
67/42.5/4 cylinder/599

**Fuel**  
Unleaded gasoline (RON 98)

**Fuel system**  
Original with PowerCommander extension + Bosch pump with pressure regulator

**Max power/max torque**  
N/A

**Transmission/differential/final drive**  
525 chain/speed-sensivity  
Visco Loc/3.43